In the Claims

Cancel claims 1-63.

64. [Previously Presented] A communication system comprising:

an interrogator configured to output a radio frequency signal; and

a communication device configured to communicate with the interrogator and including:

a receive antenna configured to receive the radio frequency signal;

a backscatter antenna;

a switch configured to selectively short-circuit a plurality of leads of the backscatter antenna providing a first load impedance of the backscatter antenna and a second load impedance of the backscatter antenna less than the first load impedance; and

communication circuitry configured to control the switch to implement backscatter communications using the backscatter antenna during a transmit mode of operation of the communication device, and to provide the switch in an open state during a receive mode of operation of the communication device; and

a transformer coupled with the communication circuitry and the backscatter antenna and configured to transform a load impedance of the backscatter antenna from the first load impedance to the second load impedance during the receive mode of operation of the communication device to provide beam forming of the backscatter antenna and the receive antenna.

65. [Previously Presented] The system of claim 64 wherein the interrogator and the communication device are configured to communicate using radio frequency identification device communications.

66. [Previously Presented] The system of claim 64 wherein the transformer comprises at least one transmission line.

67. [Previously Presented] The system of claim 66 wherein the at least one transmission line has a length equal to approximately one fourth the wavelength of the radio frequency signal.

68. [Previously Presented] The system of claim 64 wherein the receive antenna and the backscatter antenna are spaced by a distance substantially equal to a wavelength of the radio frequency signal.

69. [Previously Presented] The system of claim 64 wherein the communication device further comprises a substrate including a plurality of opposing surfaces, and wherein the receive antenna and the backscatter antenna are supported by one of the opposing surfaces and the transformer is supported by the other of the opposing surfaces.

70. [Previously Presented] A communication apparatus comprising:

a first antenna;

a second antenna; and

communication circuitry coupled with the first antenna and configured to process radio frequency signals received via the first antenna from an interrogator, the communication circuitry being further configured to control the operation of the second antenna between a first load impedance and a second load impedance less than the first load impedance to implement backscatter communications using the second antenna and to provide the second antenna including the second load impedance during receiving of the radio frequency signals using the first antenna.

71. [Previously Presented] The apparatus of claim 70 further comprising a battery configured to supply electrical energy to the communication circuitry.

72. [Previously Presented] The apparatus of claim 70 wherein the communication circuitry is configured to process radio frequency signals comprising radio frequency identification device signals.

73. [Previously Presented] The apparatus of claim 70 further comprising:

a switch; and

a plurality of transmission lines coupled with the switch and individually coupled intermediate the second antenna and the communication circuitry, and wherein the

communication circuitry is configured to open the switch to provide the second antenna including the second load impedance during the receiving of the radio frequency signals.

74. [Previously Presented] The apparatus of claim 73 wherein the transmission lines individually have a length equal to approximately one fourth the wavelength of the radio frequency signals.

75. [Previously Presented] The apparatus of claim 73 further comprising a substrate including a plurality of opposing surfaces, wherein the first antenna and the second antenna are supported by one of the opposing surfaces and the transmission lines are supported by the other of the opposing surfaces.

76. [Previously Presented] The apparatus of claim 70 wherein the first antenna and the second antenna are spaced by a distance substantially equal to a wavelength of the radio frequency signals.

77. [Previously Presented] A communication apparatus comprising:

a receive antenna adapted to receive radio frequency signals from an interrogator;

a dipole antenna including a plurality of halves;

communication circuitry configured to selectively electrically short the halves to communicate backscatter signals to the interrogator and to substantially electrically insulate the halves from one another during the receiving of radio frequency signals via the receive antenna; and

a coupler configured to electrically couple the halves with the communication circuitry and to provide a load impedance of the dipole antenna during the electrical insulation of the halves less than a load impedance of the dipole antenna during the electrical shorting of the halves.

78. [Previously Presented] The apparatus of claim 77 wherein the communication circuitry is configured to selectively electrically short the halves to communicate the backscatter signals to implement radio frequency identification device communications.

79. [Previously Presented] The apparatus of claim 77 wherein the coupler comprises at least one transmission line including a length equal to approximately one fourth the wavelength of the radio frequency signals.

80. [Previously Presented] The apparatus of claim 77 wherein the receive antenna and the dipole antenna are spaced by a distance substantially equal to a wavelength of the radio frequency signals.

81. [Previously Presented] The apparatus of claim 77 wherein the communication device further comprises a substrate including a plurality of opposing surfaces, wherein the receive antenna and the dipole antenna are supported by one of the opposing surfaces and the coupler is supported by the other of the opposing surfaces.

82. [Previously Presented] A radio frequency communication method comprising:

receiving a radio frequency signal using a receive antenna of a communication device;

selectively shorting and electrically insulating a plurality of halves of a dipole antenna to communicate a backscatter signal from the communication device;

electrically insulating the halves of the dipole antenna during the receiving; and

transforming a high load impedance of the dipole antenna to a low load impedance of the dipole antenna during the receiving.

83. [Previously Presented] The method of claim 82 wherein the receiving and selectively shorting comprise receiving and selectively shorting using radio frequency identification device communications.

84. [Previously Presented] The method of claim 82 wherein the transforming comprises transforming using a transformer including a length equal to approximately one fourth the wavelength of the radio frequency signal.

85. [Previously Presented] The method of claim 82 further comprising providing the receive antenna and the dipole antenna spaced by a distance substantially equal to a wavelength of the radio frequency signal.

86. [Previously Presented] A method of communicating using a radio frequency communication system, the method comprising:

outputting a wireless interrogation signal using an interrogator;

receiving the wireless interrogation signal using a receive antenna of a remote communication device;

controlling a load impedance of a return link antenna of the remote communication device between a first load impedance and a second load impedance less than the first load impedance to communicate information from the remote communication device to the interrogator responsive to the receiving; and

providing the return link antenna including the second load impedance during the receiving.

87. [Previously Presented] The method of claim 86 wherein the outputting and the controlling comprise outputting and controlling to implement radio frequency identification device communications.

88. [Previously Presented] The method of claim 86 wherein the controlling comprises controlling a switch intermediate a plurality of transmission lines which couple the return link antenna and communication circuitry configured to control the switch.

89. [Previously Presented] A method of forming a radio frequency communication device comprising:

providing a substrate;

coupling communication circuitry configured to process received radio frequency signals with the substrate;

providing a receive antenna and a dipole antenna over the substrate and spaced by a distance substantially equal to a wavelength of the radio frequency signals; and

coupling the dipole antenna and the communication circuitry using a connection including a length equal to approximately one fourth the wavelength of the radio frequency signals; and

coupling the receive antenna and the communication circuitry.

90. [Previously Presented] The method of claim 89 wherein the coupling communication circuitry comprises coupling radio frequency identification device communication circuitry.

91. [Previously Presented] The method of claim 89 wherein the coupling communication circuitry comprises coupling communication circuitry configured to control the emission of backscatter signals using the dipole antenna.

92. [Previously Presented] The method of claim 89 wherein the coupling the dipole antenna and the communication circuitry comprises coupling using the connection comprising a transformer comprising at least one transmission line.

93. [Previously Presented] The method of claim 89 wherein the providing the substrate comprises providing the substrate including a plurality of opposing surfaces, and wherein the receive antenna and the dipole antenna are supported by one of the opposing surfaces and the connection is supported by the other of the opposing surfaces.

94. [Previously Presented] The method of claim 89 further comprising:

supporting a battery using the substrate; and

electrically coupling the battery with the communication circuitry.

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95. [New] A radio frequency identification device comprising:

a substrate;

a first antenna borne by the substrate, the first antenna being operable to receive wireless interrogation signals;

a second antenna borne by the substrate and having plural leads, the second antenna being operable to output wireless identification signals responsive to reception of wireless interrogation signals, the first antenna and the second antenna being separated by a distance approximately equal to the wavelength of the wireless interrogation and identification signals;

a transmission line connection including plural conductive lines having respective first ends and second ends, the transmission line connection having a length of approximately one quarter the wavelength of the wireless interrogation and identification signals and being coupled with the plural leads of the second antenna at the first ends of the conductive lines, the transmission line connection being further operable as a

transformer to transform a high load impedance of the second antenna to a low load impedance; and

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an integrated circuit including a microprocessor, transponder circuitry and a switch, the switch being coupled with the second ends of the conductive lines of the transmission line connection, the microprocessor operable to control the switch to provide shorting of the leads during receiving of the wireless interrogation signals and selective isolation of the leads during outputting of the wireless identification signals.